



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/656,174	09/08/2003	Kazushige Okumoto	116997	8389
25944	7590	10/26/2006	EXAMINER	
OLIFF & BERRIDGE, PLC P.O. BOX 19928 ALEXANDRIA, VA 22320			PILKINGTON, JAMES	
			ART UNIT	PAPER NUMBER
			3682	
DATE MAILED: 10/26/2006				

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/656,174

Applicant(s)

OKUMOTO ET AL.

Examiner

James Pilkington

Art Unit

3682

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03 October 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-3, 5, 6, 8-10 and 12-14 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3, 5, 6, 8-10 and 12-14 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 08 September 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____.

- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____.

DETAILED ACTION

Drawings

1. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the "clearance between said plain bearing and said output shaft is set to be *larger* than a clearance between said rolling-contact bearings and said pinion shaft" (clm 1 and 12) must be shown. In view of applicants remarks (pg 10 paragraph 3) it is understood that the bearings are spaced from the shafts by a lubrication film layer, but the drawings do not show one clearance greater than the other. Also, "a coupling clearance between said external helical spline and said internal spline is larger than a clearance between said rolling contact bearings and pinion shaft" (clm 6 and 9) must be shown. Currently, the drawings do not show one clearance greater than another, the clearances are shown as lines. No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering

of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Objections

2. Claim 5 is objected to because of the following informalities: line 6 of the claim currently reads "...rolling-contact bearings on a side..." the examiner believes this should read - - rolling-contact bearings are on a side- -. Appropriate correction is required.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 1 and 12 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 1 and 12 recite the limitation "wherein a clearance between said plain bearing and said output shaft is set to be larger than a clearance between said rolling-contact bearings and said pinion shaft." Based on the applicants remarks (pg 10 paragraph 3) it is understood that a clearance is present to account for a lubrication layer, but it is not clear to the examiner the purpose having one clearance be larger than the other, as claimed. The specification does not disclose any benefit to having one

clearance larger than the other. Since the applicant has not provide any reason for having one clearance larger than the other any clearance distance would function the same.

Claim 1 recites the limitation "said output shaft extending along an axial direction of the output shaft" in line 4. It is unclear to the examiner what the applicant means by this limitation. Currently it reads as if the output shaft extends along an axial direction of itself. Does the applicant mean that the output shaft extends along an axial direction of the housing?

Claims 6 and 9 recites the limitation "a coupling clearance between said external helical spline and said internal helical spline is larger than a clearance between said rolling-contact bearings and said pinion shaft." The specification does not disclose any benefit to having one clearance larger than the other. Since the applicant has not provide any reason for having one clearance larger than the other any clearance distance would function the same.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 1-3, 5, 6, 8-10 and 12-14, as best understood, are rejected under 35 U.S.C. 103(a) as being unpatentable over Isozumi, UPS 5,370,009 (disclosed in First Office Action), in view of Isozumi, USP 4,923,229.

Re clm 1, Isozumi '009 discloses a starter comprising:

- A housing (6, see Figure 1)
- A rotary output shaft (7)
- A rolling-contact bearing (24) having rolling aligned along the axial direction of the output shaft
- A pinion shaft (extending to the right of 22 on which pinion 28 is mounted) inserted in an inner cylindrical bore of each rolling-contact bearing (see Figure 1) so as to be supported by a housing (6)
- A plain bearing (25) disposed between said output shaft (7) and said pinion shaft
- A motor (1) generating a rotational force
- A pinion gear (28) attached to the distal end of the pinion shaft
- A ring gear (C2/L50-52)
- The rolling-contact bearing is a ball bearing having balls serving as said rolling member (see Figure 1)
- A one-way clutch (40) coupled around said output shaft (7) via a internal helical spline (8) and shiftable on said output shaft in the axial direction together with said pinion shaft to transmit rotation of said output shaft to said pinion shaft
- Wherein an axial end of said rolling-contact bearing (24, left hand side) are on a side of said motor (1) is disposed adjacent to said one-way clutch

(40) when said pinion shaft is positioned far from said motor (1) to engage the pinion gear (30) to the ring gear. (C2/L50-52)

- Wherein said internal helical spline (8) of said one-way clutch (40) meshes with an external helical spline (teeth mesh in spaces 8a and 8b) of said output shaft (see Figure 1)
- A speed reduction device (13) is disposed between said motor (1) and said output shaft (7) to reduce rotation generated in said motor (1) and transmit reduced rotation to said output shaft (7).

Isozumi '009 does not disclose using a plurality of rolling contact bearings comprising a first rolling contact bearing and a second rolling contact bearing arranged next to each other in the axial direction with a predetermined clearance therebetween.

Isozumi '229 teaches using a plurality of rolling contact bearings comprising a first rolling contact bearing (26) and a second rolling contact bearing (27) arranged next to each other in the axial direction with a predetermined clearance therebetween (see Figure 1 or Figure 2 characters 43,44) for the purpose of preventing deflection between the rotating members (C6/L3-8).

It would have been obvious to one having ordinary skill in the art at the time of the invention to modify the teachings of Isozumi '009 and provide a plurality of rolling contact bearings comprising a first rolling contact bearing and a second rolling contact bearing arranged next to each other in the axial direction with a predetermined clearance therebetween for the purpose of preventing deflection between the rotating members.

Isozumi '009 also does not disclose a clearance between said plain bearing and said output shaft being set to be larger than a clearance between said rolling-contact bearings and said pinion shaft.

It would have been obvious to one having ordinary skill in the art at the time of the invention was made to modify the teachings of Isozumi '009 and provide a clearance between the plain bearing and the output shaft to be larger than a clearance between the rolling-contact bearings and the pinion shaft for the purpose of allowing for more lubrication to be present between the plain bearing and the output shaft to prevent wearing between the two members.

Isozumi '009 also does not explicitly disclose a coupling clearance between said external helical spline and said internal helical spline that is larger than a clearance between said rolling-contact bearings and said pinion shaft.

It would have been obvious to one having ordinary skill in the art at the time of the invention was made to modify the teachings of Isozumi '009 and provide a coupling clearance between the external helical spline and the internal helical spline that is larger than a clearance between the rolling-contact bearings and the pinion shaft for the purpose of providing more clearance between the teeth of the helical spline to introduce limited backlash and other relative movement between the members of the clutch.

Response to Arguments

7. Applicant's arguments with respect to the claims have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to James Pilkington whose telephone number is (571) 272-5052. The examiner can normally be reached on Monday-Friday 8:00AM-4:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard Ridley can be reached on (571) 272-6917. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.


Art Unit: 3682

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

JP

JP

10/20/2006


RICHARD RIDLEY
SUPERVISORY PATENT EXAMINER